

The Rivah Digest

A quarterly newsletter of the Rappahannock Area Health District



Tick-borne Diseases



With the arrival of warmer weather, we find ourselves drawn to the great outdoors. Just in time to be bitten by mosquitoes and attacked by ticks! Ticks in our area may carry infectious diseases that can be transmitted to humans if a tick attaches for a long enough period of time. The most commonly reported tick-borne disease in our area is Lyme disease, which is notoriously difficult to diagnose (see inside).

Ticks can also transmit Rocky Mountain Spotted Fever (RMSF), a rickettsial illness. RMSF is the most commonly reported rickettsial illness in the United States, and also occurs throughout Central and South America. The American dog tick and the Rocky Mountain wood tick are the primary vectors for RMSF in the US. The disease can be difficult to diagnose in the early stages, and without prompt and appropriate treatment, it can be fatal.

Over half of RMSF cases in the US are diagnosed in the south-Atlantic portion of the country, including Virginia. A diagnosis of RMSF is based on a combination of clinical signs and symptoms and specialized confirmatory laboratory tests. Because laboratory confirmation is generally not available during acute illness, treatment is initiated based on clinical and epidemiological information.

Our area also receives reports of another tick-borne illness, ehrlichiosis. In the US, human diseases caused by *Ehrlichia* species have been recognized since the mid-1980's. The ehrlichioses represent a group of clinically similar, yet epidemiologically and etiologically distinct, diseases caused by *Ehrlichia chaffeensis*, *E. ewingii*, and a bacterium extremely similar or identical to *E. phagocytophila*.

Human ehrlichiosis due to *E. chaffeensis* occurs primarily in the south-eastern and south-central regions of the country and is primarily transmitted by the lone star tick. Human granulocytic ehrlichiosis (HGE) represents the second recognized ehrlichial infection of humans in the US. The name for the species that causes HGE has not been formally proposed, but this species is closely related or identical to the veterinary pathogens *E. equi* and *E. phagocytophila*. HGE is transmitted by the blacklegged tick and the western blacklegged tick in the US.

Ehrlichia ewingii is the most recently recognized human pathogen. Disease caused by *E. ewingii* has been limited to a few patients in Missouri, Oklahoma, and Tennessee, most of whom have had underlying immunosuppression. The full extent of the geographic range of this species, its vectors, and its role in human disease is currently under investigation.

April 2008

Health Departments

- Rappahannock District Office
540-899-4797
- Caroline County
804-633-5465
- King George County
540-775-3111
- Fredericksburg
540-899-4142
- Spotsylvania County
540-507-7400
- Stafford County
540-659-3101

After-hours reporting:

- Communicable Disease & Outbreak Reporting
540-850-1250
- Environmental Pager
540-899-8601
- Rabies Pager (weekends only)
540-372-2562
- Toll-free number for public health and Bioterrorism events
866-531-3068

West Nile Virus

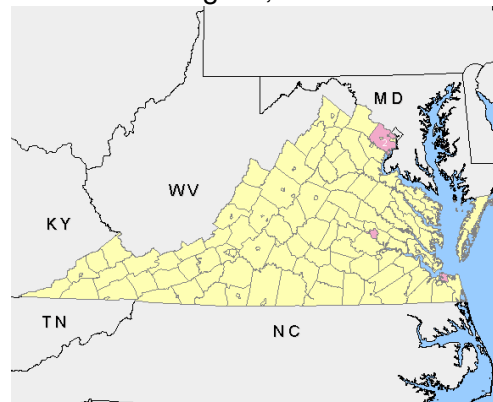
West Nile Virus (WNV) season has started in the United States. Arizona and Mississippi have reported their first human cases to the CDC (Centers for Disease Control and Prevention), while California and Alabama have reported WNV infection in birds and horses.

Virginia reported 1 human case in 2005, and 5 human cases in each of 2006 and 2007. However, vectors that can carry WNV are common in our area, and the risk for acquiring infection is real. Patients should be advised to use appropriate precautions during outdoor activities.

WNV Prevention

- 1) Use insect repellent on exposed skin. The Environmental Protection Agency has approved three repellants : DEET, picaridin, and oil of lemon eucalyptus.
- 2) When weather permits, wear long-sleeves, long pants, and socks outdoors.
- 3) Be aware of peak mosquito hours (dusk-dawn in Virginia).
- 4) Eliminate standing water (mosquito breeding sites) around the home.

Human Disease Cases by County—
Virginia, 2007



Legend
 Positive Test Results
 No Positive Test Results*

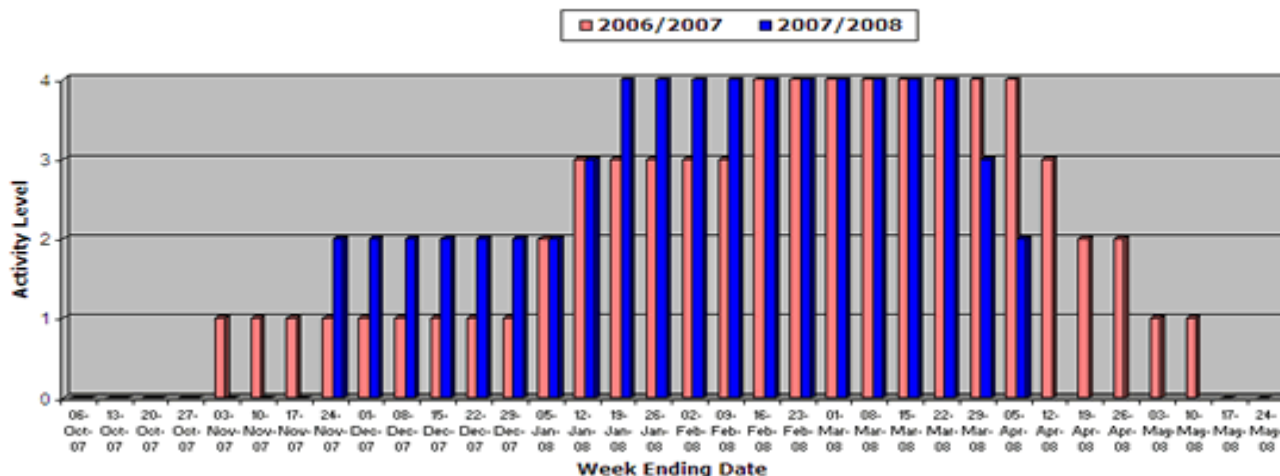
The Health District has not had a confirmed case of WNV since the disease entered the US. However, the vector is present in our area and illness could occur any year.

Pandemic/Avian Influenza Update

As of April 3, 2008, the World Health Organization (WHO) has received reports of 378 confirmed cases of human infection with the H5N1 influenza virus. Of these, 238 (63%) have been fatal. China announced that they will begin using an H5N1 influenza human vaccine developed using a Vietnamese strain virus. The vaccine underwent two phases of testing and was shown to be safe and immunogenic according to that country's standards. The WHO launched an interim version of the Influenza Virus Tracking System, available to the public at https://www.who.int/fluvirus_tracker. This system allows researchers and the public to track Influenza A (H5) viruses submitted by member states to the Global Influenza Surveillance Network.

Influenza 2007—2008: Update

Comparison of Two Flu Seasons in Virginia



Activity Levels: 0= No Activity, 1= Sporadic, 2= Local, 3= Regional, 4= Widespread.

For a more detailed explanation of activity levels, see

<http://www.vdh.virginia.gov/Epidemiology/Surveillance/Influenza/>

Diagnosis of Lyme Disease

Lyme disease is diagnosed based on symptoms, objective physical findings (such as erythema migrans, facial palsy, or arthritis), and a history of possible exposure to infected ticks. Validated laboratory tests can be very helpful but are not generally recommended when a patient has erythema migrans. When making a diagnosis of Lyme disease, health care providers should consider other diseases that may cause similar illness. Not all patients with Lyme disease will develop the characteristic bulls-eye rash, and many may not recall a tick bite. Laboratory testing is not recommended for persons who do not have symptoms of Lyme disease.

Laboratory Testing

Several forms of laboratory testing for Lyme disease are available, some of which have not been adequately validated. Most recommended tests are blood tests that measure antibodies made in response to the infection. These tests may be falsely negative in patients with early disease, but they are quite reliable for diagnosis later stages of disease.

CDC recommends a two-step process when testing blood for evidence of Lyme disease. Both steps can be done using the same blood sample.

- 1) The first step uses an ELISA or IFA test. These tests are designed to be very sensitive, meaning that almost everyone with Lyme disease, and some people who don't have Lyme disease, will test positive. If the ELISA or IFA is negative, it is highly unlikely that the person has Lyme disease, and no further testing is recommended. If the ELISA or IFA is positive or indeterminate (sometimes called "equivocal"), a second step should be performed to confirm the results.
- 2) The second step uses a Western blot test. Used appropriately, this test is designed to be specific, meaning that it will usually be positive only if a person has been truly infected. If the Western blot is negative, it suggests that the first test was a false positive, which can occur for several reasons. Sometimes two types of Western blot are performed, IgM and IgG. Patients who are positive by IgM but not IgG should have the test repeated a few weeks later if they remain ill. If they are still positive only by IgM and have been ill longer than one month, this is likely a false positive.

CDC does not recommend testing blood by Western blot without first testing it by ELISA or IFA. Doing so increases the potential for false positive results. Such results may lead to patients being treated for Lyme disease when they don't have it and not getting appropriate treatment for the true cause of their illness.

For detailed recommendations for test performance and interpretation of serologic tests, visit <http://www.cdc.gov/mmwr/preview/mmwrhtml/00038469.htm>.

Other Types of Laboratory Testing

Some laboratories offer Lyme disease testing using assays whose accuracy and clinical usefulness have not been adequately established. These tests include urine antigen tests, immunofluorescent staining for cell wall-deficient forms of *Borrelia burgdorferi*, and lymphocyte transformation tests. In general, CDC does not recommend these tests. Patients are encouraged to ask their physicians whether their testing for Lyme disease was performed using validated methods and whether results were interpreted using appropriate guidelines.

Testing Ticks

Patients who have removed a tick often wonder if they should have it tested. In general, the identification and testing of individual ticks is not useful for deciding if a person should get antibiotics following a tick bite. The Health District does not offer tick testing or tick identification services.

*Thomas Franck, MD, MPH — Health Director
Michele Winters-Callender, RN —Nurse Manager
Bill Perry, REHS—Environmental Health Manager
Elizabeth Lowery, MPH — District Epidemiologist
Joe Saitta, Ed.D — Emergency Services Coordinator*



Rappahannock Area Health District
608 Jackson Street
Fredericksburg, VA 22401
Phone: 540-899-4797
Fax: 540-899-4599

Please visit us on the web @
rahd.vdh.virginia.gov

Announcements

The Rappahannock Medical Reserve Corps (RMRC) will hold its next meeting at 6:30 p.m. on May 1 at the Fredericksburg Health Department, located at 608 Jackson Street. The training topic will be “Local, State, and Federal Planning,” presented by Dr. Chris Jasparro and Dr. Joseph Saitta. All are welcome at the training. If you are interested in becoming a member of the RMRC, visit <http://www.medicalreservecorps.us>.